

# ***Bembecia lingenhoelei*, a new Clearwing moth from Tajikistan (Lepidoptera: Sesiidae)**

Theo Garrevoet & Walter Garrevoet

**Summary.** A new species of *Bembecia* Hübner, [1819] was collected in Tajikistan (Central Asia) in the Hissar Mountains north of the capital Dushanbe. Both genders and their genitalia as well as the egg are described and illustrated.

**Samenvatting.** *Bembecia lingenhoelei*, een nieuwe wespvlinder uit Tadjikistan (Lepidoptera: Sesiidae)

Een nieuwe soort *Bembecia* Hübner, [1819] werd in Tadjikistan (Centraal-Azië) in het Hissargebied ten noorden van de hoofdstad Dushanbe verzameld. Beide sexen, hun genitaliën en het ei worden beschreven en afgebeeld.

**Zusammenfassung.** *Bembecia lingenhoelei*, eine neue Glasflüglerart aus Tadjikistan (Lepidoptera: Sesiidae)

Eine neue Art von *Bembecia* Hübner, [1819] wurde in Tadjikistan (Zentral Asien) im Hissar Gebirge nördlich der Hauptstadt Dushanbe gesammelt. Beide Geschlechter samt ihrer Genitalstrukturen sowie das Ei werden beschrieben und illustriert.

**Résumé.** *Bembecia lingenhoelei*, une espèce nouvelle de sésie du Tadjikistan (Lepidoptera: Sesiidae)

Une espèce nouvelle du genre *Bembecia* Hübner [1819] a été capturée au Tadjikistan (Asie Centrale) dans les monts Hissar au nord de la capitale, Dushanbe. Les deux sexes, ainsi que leurs genitalia et l'œuf sont décrits et illustrés.

**Key words.** Lepidoptera – Sesiidae – *Bembecia* – taxonomy – new species – Palaearctic Region – Central Asia – Tajikistan.

Garrevoet, T.: Kampioenstraat 14, B-2020 Antwerpen, Belgium. theo.garrevoet@telenet.be.

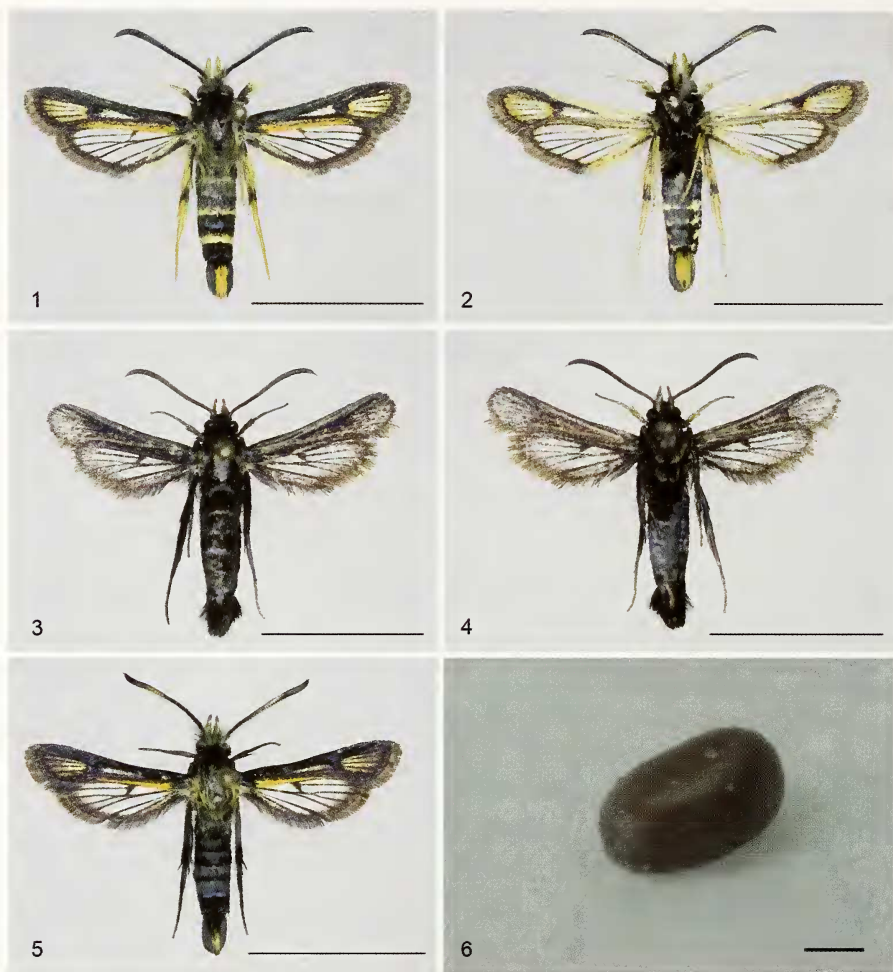
Garrevoet, W.: Reetsesteenweg 1, B-2630 Aartselaar, Belgium. walter.garrevoet@telenet.be.

## **Introduction**

The Sesiidae fauna of most Central-Asian countries was subject of investigation by several authors (Špatenka 1987; Špatenka 1997; Špatenka, Petersen & Kallies 1997; Gorbunov 2001; Špatenka & Kallies 2001; Špatenka & Kallies 2006; Špatenka & Bartsch 2010; Stalling, Altermatt, Lingenhöle & Garrevoet 2010).

Nevertheless it is obvious the clearwing fauna is still insufficiently known and there is need for more detailed investigation. Especially Tajikistan, victim of a civil war in the recent past, was virtually inaccessible since the use of pheromones became common practice in the study of Sesiidae. With this in mind, two expeditions –in 2009 and 2010– to this beautiful and interesting country were organised, mainly to study this fascinating moth family.

As a result, some hitherto unrecorded species belonging to the genus *Bembecia* Hübner, [1819] were collected. One of these is described here.



Figs 1–6. *Bembecia lingenhoelei* sp. n.

1.— Holotype ♂, dorsal view, Tajikistan, Region Sughd, 3 km SE of Anzob, 65 km N of Dushanbe, 2150 m, 16.VII.2009; 2.— Holotype ♂, ventral view;

3.— Paratype ♀, dorsal view, Tajikistan, Region of Republican Subordination, 2 km S of Anzob Pass, 2450 m, 25.VII.2009, leg. T. & J. Garrevoet; 4.— Paratype ♀, ventral view;

5.— Paratype ♂, dark morph, dorsal view, Tajikistan, Region of Republican Subordination, Safedorak, 2350 m, 17.VII.2009, leg. T. & J. Garrevoet. All scale bars 10 mm.

6.— Egg. Scale bar 0.2 mm. (Photos T. Garrevoet).



Fig. 7. Male genitalia of *Bembecia lingenhoelei* **sp. n.**, paratype, Tajikistan, Region Sughd, 3 km SE of Anzob, 2150 m, 16.VII.2009, leg. T. & J. Garrevoet, prep. TG2010-005. Scale bar 1 mm. (Photo T. Garrevoet)

Fig. 8. Female genitalia of *Bembecia lingenhoelei* **sp. n.**, paratype (Tajikistan, Region Sughd, 3 km SE of Anzob, 2200 m, 17.VII.2010, leg. T., W. & J. Garrevoet, prep. TG2011-008. Scale bar 1 mm. (Photo T. Garrevoet)

Fig. 9. Habitat of *Bembecia lingenhoelei* **sp. n.**, Tajikistan, Region Sughd, 3 km SE of Anzob, 65 km N of Dushanbe, 2150 m. (Photo J. Garrevoet).

## Materials and Methods

The majority of the specimens was collected using a synthetic pheromone originating from PRI, Plant Research International, Wageningen, The Netherlands, which contains (Z,Z)-3,13-Octadecadienyl acetate and (E,Z)-3,13-Octadecadienyl acetate in a 1:9 ratio. A few specimens were attracted to the old pheromone for *Synanthedon myopaeformis* "Schwarzes Band" BASF, Germany, having an unknown composition. Some animals, including two females, were netted without the use of pheromones.

Abbreviations. CTG – collection of T. & W. Garrevoet; CAL – collection of A. Lingenhöle; CDB – collection of D. Bartsch.

### *Bembecia lingenhoelei* sp. n. (figs 1–8)

Holotype ♂, Tajikistan, Region Sughd, 3 km SE of Anzob, 65 km N of Dushanbe, 2150 m, N39°09'05.1" E068°50'55.2", 16.VII.2009, leg. T. & J. Garrevoet (CTG; the holotype will be deposited in the State Museum of Natural History, Stuttgart, Germany).

194 Paratypes: CTG: 16♂, same data as holotype, 9.VII.2009; 50♂, id., 16.VII.2009, 18♂, Region of Republican Subordination, Safedorak, 37 km NE Dushanbe, 2350 m, 17.VII.2009, N38°51'24.1", E69°00'03.2"; 51♂ + 1♀, Region of Republican Subordination, 2 km S of Anzob Pass, 55 km N of Dushanbe, 2450 m, 25.VII.2009, N39°03'59.7", E68°51'00.0"; leg. T. & J. Garrevoet; 4♂ + 1♀, Region Sughd, 3 km SE of Anzob, 65 km N of Dushanbe, 2200 m, 17.VII.2010, N39°09'06.6" E068°50'46.5"; 1♂, Region of Republican Subordination, 3 km N of Anzob Pass, 60 km N of Dushanbe, 2750 m, 08.VIII.2010, N39°06'35.4" E068°51'17.2", leg. T., W. & J. Garrevoet.

CAL: 24♂, Hissar Mountains, Anzob Pass Nordseite, 2150 m, 8.VII.2009, N 39°09'05 E68°50'50; 7♂, same data, 16.VII.2009; 2♂, Anzob Pass Südseite, 2450 m, 24.VII.2009, N39°03'47, E68°51'18; 11♂, 50 km nördlich Dushanbe, Safedorak, 2350 m, 17.VII.2009, N38°51'24, E69°00'03, leg A. Lingenhöle.

CDB: 1♂, Tajikistan, Distr. Dushanbe, Hissar mountain range, northern ascent to Anzob Pass, 2150 m, 23.VII.2010, pheromone, N39°09'05" E68°55'50", leg. D. Bartsch; 1♂, same data, 16.VII.2009, leg A. Lingenhöle; 1♂, Safedorak, 2350 m, N38°51'24" E69°00'03", 17.VII.2009, leg A. Lingenhöle; 5♂, Region of Republican Subordination, 2 km S of Anzob Pass, 55 km N of Dushanbe, 2450 m, 25.VII.2009, N39°03'59.7" E68°51'00.0", leg. T. & J. Garrevoet.

**Etymology.** This new species is named after Arthur Lingenhöle, a fine companion during many entomological trips and a renowned specialist on Sesiidae.

### Description

**Male.** Holotype (figs 1–2) ♂ Wingspan 23 mm, forewing length 10 mm, body length 14 mm, antenna 6 mm.

Caput. Antenna black with some yellow scales especially dorso-medially; labial palp yellow, laterally with long black hair like scales; frons black; vertex with long gray-yellow scales.

Thorax. Black with a yellow scapular spot at forewing base; patagia black; tegula black, pale yellow distally.



Fore legs. Coxa black. Femur yellow, black dorsally. Tibia yellow, dorsally with yellow and black hair-like scales. Tarsus yellow.

Hind legs. Coxa black. Femur black with long yellow hair like scales. A very distinct black area at the mainly yellow spurs. Tibia and Tarsus completely yellow.

Abdomen. Brown-black. Tergite IV and VI clearly contrasting yellow distally. Sternite IV faintly yellow distally. Anal tuft yellow, black laterally.

Forewing. Well developed transparent areas. Costa broad, black. Anal area orange. Discoidal spot black, faintly orange distally. Posterior transparent area narrow and short, anterior transparent area long and broad. External transparent area broad, containing 4 cells. Apical area narrow, orange. All veins black except M1 and M2 which are orange with sparse black scales. Under side all veins orange with sparse black scales. Outer margin rather broad, greyish-brown. Fringes also greyish brown.

Hindwing. Veins and discoidal spot black, the latter reaching M3; fringes brown-black, anal area very contrasting grey yellow. Underside discoidal spot orange; veins orange with dispersed black scales; outer margin broad with greyish-brown fringes.

Male genitalia (Fig. 7). Valva elongate, rounded; crista sacculi rather short, reaching middle of valva, with discontinuous row of pointed setae. Just after this gap, the crista sacculi ends distally with a slightly upwards bended group of densely implanted blunt scale-like setae. Tegumen-uncus complex simple, gnathos without crista medialis. Aedeagus straight, slender, as long as valva.

**Female.** Paratypus (figs 3–4) ♀ Wingspan 20 mm, forewing length 9 mm, body length 14 mm, antenna 6 mm; Tajikistan, Region of Republican Subordination, 2 km S of Anzob Pass, 55 km N of Dushanbe, 2450 m, N39°03'59.7" E068°51'00.0", 25.VII.2009, leg. T. & J. Garrevoet.

Caput. Almost completely black; antenna with ample yellow scales especially ventrally at the segment intersections, labial palps ventrally with long brown-black scales intermixed with yellow ones; scales of vertex very long.

Thorax, abdomen and legs. Completely black; scales of posterior border of segments II–VI with dark blue metallic shine, especially dorsally. Foreleg with a few yellow scales on femur and dorsal side of tibia. A clear yellow ventral side on the latter; tarsus with sparse yellow hair-like scales. Tibia and tarsus of hindleg sparsely mottled with yellow, hair-like scales.

Wings. Black throughout, forewing without transparent areas, only external transparent area a little less densely scaled; discoidal spot barely visible. Hindwing with medial part hyaline with dispersed black scales; broad margins and anal area more or less densely covered with scales; discoidal spot reaching M3.

Female genitalia (Fig. 8). Due to the fact that the abdomen of the female was filled with dried eggs some fine structures (e.g. anterior and posterior

apophyses) were apparently irreversibly glued to these eggs causing artefacts at the preparation. Nevertheless, sufficient characteristics remained to rectify the description and illustration. Lamella postvaginalis weakly sclerotised. Antrum long, of equal length as the ductus bursae. Corpus bursae damaged but obviously elongate.

**Variability.** Typical specimens vary only slightly in colour and colour intensity but, exceptionally, very dark specimens occur (Fig. 5). In some specimens tergite II of the abdomen shows a small, faint additional yellow ring distally. The size of the type series varies from 14–24 mm; the majority of the specimens ranges from 21–23 mm.

**Differential diagnosis.** *Bembecia lingenhoelei* **sp. nov.** is easily distinguished from the resembling species by using only external morphological characteristics. It resembles mostly *Bembecia guesnoni* (Špatenka & Toševski, 1994) from Northern India, which is more slender, with larger external transparent area and without scapular spot at the forewing base. The male genitalia of *B. guesnoni* differ by the very long crista sacculi, which extends to the apex of the valva. Some superficial resemblances exist also with *Bembecia pashtuna* Špatenka, 1997 from Pakistan and *Bembecia nivalis* Špatenka, 2001 from Northern India. *B. pashtuna* is more uniform brown and lacks the yellow markings on legs, labial palps and anal tuft and the orange colouration of the forewing. *B. nivalis* can be distinguished by the extraordinary long hair-like scales on the labial palps, the larger external transparent area and the completely black anal tuft. Furthermore, both species lack the yellow fringes at the hind wing anal margin.

**Bionomics.** Both larva and foodplant are unknown. As potential hosts, a lot of different Fabaceae grow at the biotopes where *Bembecia lingenhoelei* **sp. nov.** was observed. The egg (Fig. 6), obtained from the dissected female, is dark brown, smooth and of ellipsoid shape which is typical for Sesiidae.

**Distribution.** Known only from the north-eastern Hissar Mountains north of the Tajik capital Dushanbe (Fig. 9).

## Acknowledgements

The authors want to thank their respective son and brother Jan Garrevoet for his invaluable support in collecting and the care for the technical aspect of all our entomological trips. Also most pictures in free nature are his work.

Finally we also want to express our gratitude to Daniel Bartsch (Stuttgart) for his constructive comments on this article.

## Literature

Gorbunov, O. 2001. Two new species of the genus *Bembecia* Hübner (Lepidoptera, Sesiidae) from Tadzhikistan and Turkmenistan. — *Melittia* 1: 125–134.

- Špatenka, K. 1987. Fünf neue paläarktische Glasflügler (Lepidoptera, Sesiidae). — *Zeitschrift der Arbeitsgemeinschaft Österreichischer Entomologen* **39**(1/2): 12–26.
- Špatenka, K. 1997. Neue Glasflügler (Lepidoptera, Sesiidae) aus dem Pamir und dem Hindukusch. — *Bonner Zoologische Beiträge* **47**(1/2): 31–44.
- Špatenka, K. 2001. Neue paläarktische Glasflügler-Arten (Lepidoptera: Sesiidae). — *Entomologische Zeitschrift* **111**(3): 75–80.
- Špatenka, K. & Bartsch, D. 2010. Drei neue Arten von *Bembecia* Hübner, [1819] aus Usbekistan (Lepidoptera: Sesiidae). — *Entomologische Zeitschrift* **120** (1): 41–45.
- Špatenka, K. & Kallies, A. 2001. Zur Taxonomie, Bionomie und Verbreitung zentralasiatischer Sesiidae und Brachodidae (Lepidoptera, Sesioidea). — *Entomologische Zeitschrift* **111**(7/8): 199–205, 234–237.
- Špatenka, K., & Kallies, A. 2006. Zwei neue Glasflüglerarten sowie eine kommentierte Checkliste der Glasflügler Kyrgyzstans (Lepidoptera: Sesiidae). — *Entomologische Zeitschrift* **116**(4): 163–168.
- Špatenka, K., Petersen, M. & Kallies, A. 1997. Ergebnisse einer sesiidologischen Expedition 1994 nach Kasachstan und Kirgistan (Lepidoptera: Sesiidae). — *Nachrichten des entomologischen Vereins Apollo, N.F.* **17**(4): 405–422.
- Špatenka, K., & Tosevski, I. 1994. *Bembecia guesnoni* spec. nov., a new species of clearwing moth from North India. (Lepidoptera, Sesiidae). — *Atalanta* **25**(1/2): 313–316.
- Stalling, T., Altermatt, F., Lingenhöle, A. & Garrevoet, T., 2010. A new species of *Bembecia* Hübner, [1819] from Tajikistan, Central Asia (Lepidoptera: Sesiidae). — *Entomologische Zeitschrift Stuttgart* **120**(5): 249–251.
-